(No. 2.)

CONTINUATION

OF A MONOGRAPH OF THE BIVALVE SHELLS OF THE RIVER OHIO, AND OTHER RIVERS OF THE WESTERN STATES.

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(*Published at Brussels, September* 1820.)

Containing 46 Species, from No. 76, to No. 121.

INCLUDING AN APPENDIX ON SOME

BIVALVE SHELLS OF THE RIVERS OF HINDOSTAN,

WITH A SUPPLEMENT ON THE

FOSSIL BIVALVE SHELLS OF THE WESTERN STATES,

AND THE TULOSITES,

A new Genus of Fossils.

PHILADELPHIA, OCTOBER, 1831.

Hardly a dozen species of North American fluviatile bivalve shells, had been mentioned by Bosc, Lamark, Say, and Lesueur, before 1820, when I described, in a special and ample Monograph, 75 species of them! with 40 varieties, mostly discovered by myself, in my travels of 1818 and 1819, and figured 28 of them. This labour was written at Lexington, in January 1820, and published in French, at Brussels, in September 1820, in the *General Annals* of *Physical Sciences*, by Bory and Drapiez, and also in a separate pamphlet. I stated then, that several other species existed in the Western Waters, but described none but those I had before my eyes. I have, however, diligently collected these additional species, in my successive travels between 1820 and 1826, and have thus added, at least 40 species to the 75 already described; some of which, must also form peculiar Genera, or Sub-genera, particularly the *Lasmonos*, which fills the gap in the variety of hinges. We have thus five different tribes of Bivalve shells.

1. *Unio.* Hinge, with a cardinal tooth and a lamellar tooth.

2. *Alasmodon.* Hinge, with a cardinal tooth only.

3. *Lasmonos.* Hinge, with a lamellar tooth only.

4. *Anodonta.* Hinge, without teeth.

5. *Cyclas.* Hinge, with two lamellar teeth.

My labour on this branch of conchology, of which I was the pioneer and first historian, has attracted a great deal of attention in Europe, and latterly, also, with us. I was repeatedly asked for the shells I had discovered and described; I disposed of some rare ones, for the Museum of my friend Clifford, in Lexington, and for the Museum of Transylvania University. I furnished several to my friends, Elliot, Collins, Graham, Hart, &c. in America, and Ferussac, Bronguiart, Swainson, Sowerby, &c. in Europe. Meantime, I have lately found that these fine shells have acquired a great value in Europe, and some have sold at very high prices in England, Germany, and France, while I have seldom derived any profit from them, but much trouble, expense, and even vexation. I am determined to dispose of none left me, but for sale; I have as yet 400 specimens, or 60 species, of my Monograph in my cabinet, and all those described in this continuation, about 96 species in all, which I value from one to five dollars each; and even 5 species at ten dollars or more, being perhaps unique specimens. I offer them all for sale, and have begun to sell upwards of 50 to Mr. Ch. A. Poulson, for his fine cabinet in Philadelphia.

Some of these shells are so very rare, that I have only met them once in 4000 miles of travels and explorations; others I have never seen, except in collections, such are the *Unio ridibundus*, and the *Alasmodon complanatum*, for instance. I shall describe here, only those which *I have now before my eyes*, and with the names given them ten years ago, at their discovery; I have seen a few others, which I delay to describe, not having them now in my hands. Those who shall purchase these new shells, may have the pleasure to give splendid figures of them, if they like.

Since 1820, several American Conchologists have attempted to notice, describe, or figure these shells; Barnes, in 1823, Lea, Say, and Eaton, later still. They had a fine field before them, in elucidating them by good figures, and describing the new kinds; but led astray, by various motives, they have neglected to verify, or properly notice my previous labours, *although they were known to them*. Mr. Say is, above all, inexcusable. I had respectfully noticed, in 1820, his previous labours; but he has never mentioned mine, and knows so little of the animals of these shells, as to have mistaken their mouth for their tail, and their anterior for the posterior part of the shells!

If he had seen these animals alive, feeding, moving, and watched their habits as I have done repeatedly, he would not have fallen into such a blunder. The mouth is always near the cardinal tooth, and the lamellar tooth is to the right of it in the right valve, to the left in the left valve.—Others pretend that my monograph is too intricate; it is the subject which is such; whenever many species belong to a tribe, many divisions and sections are needed to

elucidate and isolate the species. All the great naturalists know and do this.

The works wherein their erroneous labors are found cost above $100! (mine only 50 cents.) This has put it out of my power, as yet, to verify all their mistaken and synonymous names. A complete synonymy of these shells will soon be required, which I may perhaps undertake in future, unless it is done by Mr. Poulson, who has translated and means to publish my Monograph of 1820. This continuation will be a supplement to his translation. I mean to give in it my shells under my own names, imposed as soon as found in 1821 and 1822 chiefly, the undoubted right of a previous discoverer and explorer. If some of them are already well named and described, let their names be compared and the oldest or best prevail, as those of my old Monograph ought in all cases. C. S. R. *Philadelphia, Oct.* 1831.

I. TRIBE—UNIO.

1. N. G. Epioblasma. Differs from *Amblema* and *Ellipsaria* by lamellar tooth obliquel, divergent towards the back and straight. Axis nearly terminal. The *Unio* or *Amblema torulosa.* Sp. 55 perhaps belongs here also.

76 Sp. *Unio biloba*, or *Epioblasma biloba*, discovered 1821.

Elliptical, both ends rounded, back convex, belly bilobed, sides rugose, more or less gibbose, swelled before, greenish brown outside, bluish white inside. Breadth 2-3, diameter 2-5 of the length.

Var. I. *Pallida*, not greenish, rufescent, a little longer.

In Green river and Kentucky river, about 3 inches long. Remarkable species, very rare, summits prominent, teeth striated, the lamellar short, reaching only to the middle.

2. N. G. Toxolasma, Differs from *Amblema*, *Plagiola* and *Sintoxia*, by lamellar tooth not obliquel but arched parallel with the back, axis nearly terminal, general form rounded, back curved.

77 Sp. *Unio cyclips.* (*Toxolasma cyclips.*—1820.) Shell thick, rounded-elliptical, swelled subglobose, subrugose and yellowish outside, incarnate inside. Breadth 6-7, diameter 4-8 of the length. Axis 1-10th.

Var. I. *Fuscata.* Larger, brown outside, and nearly smooth, whiter inside, longer lamellar tooth.

Var. II. *Lutescens.* Yellow outside, bluish white inside.

River Ohio and Mississippi 2 to 4 inches, beautiful nacre, lamellar tooth carinate, serrulate as in many other species. It is said that this is the *U. abruptus* of Say. I cannot see any thing abrupt in it; my name means *Round Ellipsis.*

78 sp. *Unio cinerescens* (*Toxolasma ditto.* 1820.) Shell thick rounded oboval, a slight posterior obliquel ridge, nearly smooth and cinerescent brown outside, bluish white inside. Breadth 8-9, diameter 5-9 of the length. Axis 1-9th.

River Ohio and Kentucky. About 2 inches, cardinal tooth much striated, lamellar not serrulate.

79 sp. *Unio lividus*, (*Toxolasma do.* 1822.) Shell elliptical swelled not thick, outside subrugose, brown, inside livid purplish. Length 3-4, diameter 3-8, axis 1-4 of the breadth.

In Rockcastle river, exceedingly rare.—Size only one inch, lamellar tooth long, thin curved, not serrulate.

80. Sp. *Unio flexus.* [Toxolasma, ditto, 1821.] Shell thick rounded, swelled, undulate below; outside subrugose, olive brown, inside bluish white. Length 5-6, diameter 1-2, axis 1-6th of the breadth.

In the Kentucky river, rare, 1 or 2 inches, lamellar tooth well curved, thick; not serrulate.

3. N. G. Bariosta. Form of *Scalenaria*, lamellar tooth curved, and not obliquel, as in *Sintoxia*, shell transversal, triangular.

81. Sp. *Unio ponderosus.* (*Bariosta* ditto, 1820.) shell very thick and heavy, oval triangular, rounded before, curved slope behind, with an oblique ridge ending to a point, a sinus next to it: outside rough and blackish; inside incarnate, iridescent, uneven. Length 3-5, diameter 2-5, axis 1-4 of the breadth.

In the lower Ohio and Mississippi. Fine shell, with beautiful nacre, 3 to 5 inches broad; cardinal tooth striate, lamellar tooth scabrous! Many uneven wrinkles inside. The *U. sinuata* Sp. 67, belongs to this section *Bariosta* having a similar lamellar tooth: but it is broader, more elliptical, without ridge, and white inside; the sinus is also more central.

82 sp. *Unio vittatus* (*Lampsilis? vittata.*—1818.) Shell oval, swelled, rather thin, broad subalate and subtruncate behind with two or three oblique ribs longitudinal, rounded and rugose before, sides smooth, outside olivaceous, radiated with narrow straight greenish rays, bluish white inside. Length 3-4, diameter one half, axis one third of breadth.

In Green river, 3 inches broad or more. Very near my *Lampsilis fasciola*, sp. 26:—but it is larger, rounder, with straight rays. Cardinal tooth crenulate, lamellar tooth not flexuose, but well curved in the right valve; short, compressed, truncate behind.

83 Sp. *Unio montanus*, (*Eurynia montana*, 1823.) Shell thin, elliptical, compressed, behind broad a little winged, end truncate, outside nearly smooth brown, a little laminated and fulvous around, inside bluish. Length one half, diameter and axis 2-5 of breadth.

In the streams of the Alleghany and Cumberland mountains. About 2 inches. Lamellar tooth very long, nearly straight, a sinus above it.

84 Sp. *Unio diploderma*, (*Lampsilis ditto.* 1822.) Shell thin elliptical, hardly swelled: back hardly broader: surface a little ribbed with a double epidermis, the outer rufous, the inner greenish: inside bluish purple.—Length 7-12, diameter 1-3, axis 1-4 of breadth.

In Salt river, rare, small, 1½ inch; cardinal tooth almost as in *Leptodea*, lamellar tooth well curved, and flexuose.

85 Sp. *Unio diaphanus*, (*Metaptera? diaphana* 1821. Shell very thin, transparent, oval-elliptic, swelled, broader behind, with a small wing, surface smooth horny, inside, pale incarnate. Length 3-4, diameter and axis 3-8 of the breadth. Var. *lineolata* with fulvous greenish lines.

In small streams of Kentucky, one or two inches, rare, cardinal tooth compressed, crenulate, lamellar well curved.

86 Sp. *Unio lasmabrachys* (*Metaptera? dv.* 1820). Shell rather thick, oval triangular, swelled, truncate behind with an arched ridge, surface rugose horny, inside bluish white, small truncate wing, beaks prominent. Length 5-7, diameter 3-7, axis 2-7 of the breadth.

Licking river, &c. 3 or 4 inches, rare, deep cavity inside: teeth wide apart, cardinal crenulate, lamellar very short, broad and truncate in the right valve. This and the last belong more to *Metaptera* by the teeth than the wings.

87 Sp. *Unio rimosus*, (*Eurynia rimosa.* 1823.) Shell elliptic, thick, thinner, broader, and rimose behind: surface olivaceous nearly smooth, inside bluish white. Length 2-3 diameter 1-6, axis 1-4 of length.

In the Cumberland river, rare, small 1½ inch. Resembling some *Amblemas*, but evidently transversal, cardinal tooth crenulate, lamellar smooth, short, nearly horizontal, but a little curved towards the back. Perhaps a peculiar S. G. near to *Epioblasma*, it might be called *Lemiox*.

88. Sp. *Unio fulvus*, [*Eurynia fulva.*—1823.] Shell elliptical, thick before, sloping behind, surface depressed nearly smooth, bright fulvous or rufous outside and inside. Length one half, diameter and axis one fifth of the breadth.

Var. 2. *Fuscata*, brownish rufous outside, pale inside.

Var. 2. *Rufa*, quite rufous outside, iridescent inside.

In Green river, Rockcastle river, &c.,—rare, fine shell, 2 or 3 inches, cardinal tooth crenate, lamellar long and straight. Near to my *U. auratus*.

G. Obliquaria.

89 Sp. *Unio calendis*, (*Obliq. calendis.*—1821.) Shell thick and swelled, rounded, subtruncate behind, surface with broad flat wrinkles. Length 7-8, diameter 1-2, axis 1-5 of the breadth: outside yellowish, inside iridescent and uneven.

In Dick river, &c. Fine sp. beautiful nacre, rare, 2 inches. Near to *U. cyclips*, but smaller, less round, lamellar tooth quite oblique, slightly curved as in the *Plagiola*, cardinal tooth striated; probably a *Sintoxia*.

90 Sp. *Unio Venus*, (*Obliquaria Venus.*—1820.) Shell oval elliptic, thick and swelled, truncate behind with transverse wrinkles, outside nearly smooth, of a reddish chesnut colour, inside lilac iridescent. Length 3-4, diameter 1-2, axis 1-3 of the length.

In the Kentucky and Cumberland, very rare, 3 inches wide; the prettiest of all the Unios, resembling a Venus. Lamellar tooth thick erose obliqual. My *Unio Elliptica* sp. 8, is very near to this: both are of S. G. *Aximedia*.

91 Sp. *Unio plateolus*, (Obliq ditto. 1823. Shell rather thin, broad, elliptic lanceolate, attenuate and subacute behind, very compressed or nearly flat, outside brown nearly smooth, inside bluish. Length one half, diameter and axis 1-5 of breadth.

At the falls of the Cumberland. Small, 2 inches, rare. Akin to *U. cuprea*. Cardinal tooth small, bilobe, lamellar obliqual, short.

92. *Unio tenellus*, (Obliq. ditto. 1822.) Shell elliptic thin, nearly equilateral, quite flat, margin erose, outside minutely striated, olivaceous with square green spots, inside bluish. Length 4-7, diameter 1-7, axis 3-7 of the breadth.

Exceedingly rare, seen only once in a stream of the Knob-hills of Kentucky. Size one inch. It is an *Aximedia* which is to be a S. G. of *Obliquaria*. Lamellar tooth obliqual very short, cardinal bilobe small as in *Leptodea*.

93 Sp. *Unio bicolor*, (Obliq. ditto. 1821.) Shell thick elliptic, lanceolate, attenuate and subtruncate behind, with an obliquaf ridge, outside brown nearly smooth, inside yellow above, white beneath. Length 1-2, diameter 1-3, axis 1-5 of breadth.

In Kentucky river, 3 or 4 inches, akin to *U. dilatata*, but smoother inside, different nacre, axis more anterior: more rare and beautiful. Lamellar tooth obliqual thick.—The *U. dilatata* is however also an *Obliquaria* and may be called *Obl. violacea*.

94 Sp. *Unio pallens*, (Obliq. ditto, 1821.) Shell thick compressed, perfectly elliptic, both ends equal, hardly subtruncate behind, outside smooth pale yellowish, inside white. Length 3-5, diameter 3-10, axis 1-5 of the breadth.

Ohio and Kentucky, rare, 2 or 3 inches. Lamellar tooth a little obliqual, short and thick, in the left valve furrow closed as in the *G. Obovaria* and *Rotundaria*. Yet an *Elliptio* which is the same as *Ellipsaria*.

95 Sp. *Unio rivularis*, [Obliq. ditto. 1821.] Shell rather thick swelled, perfectly elliptical, slightly arcuate below, outside brown and smooth, inside bluish. Length 4-7, diameter 3-7, axis 2-7 of breadth.

In the small streams of the Knob hills and Cumberland mountains. Very small, hardly one inch. Lamellar tooth as in sp. 93.—Near to *U. sinuata*, sp. 67.

96. *Unio fontinalis*, (*Obliq. ditto*, 1823;) Shell thick, rounded, triangular, sub-truncate behind; quite rounded before and below; outside smooth, yellow, with some green spots; inside bluish white. Length 4-5, diameter 3-5, axis 2-5 of the breadth.

At the spring of the source of Green R. in the Knobhills, rare, very small, like a Cyclas; but belong to S. G *Scalenaria*, lamellar tooth obliqual, straight, short.

97. Sp. *Unio chloris*, (Obliq. chloris. 1823.) Shell oval obliqual, rather thick, and swelled; the 3 sides rounded, outside greenish and smooth, inside bluish iridescent. Length 4-5, diameter 3-5, axis 1-5 of the breadth.

Small streams of Knobhills. Minute shell, next to *U. calendis* Sp. 89, but distinct, lamellar tooth more curved, and not bisulcate. Both are *Sintoxia*.

98. Sp. *Unio castaneus*; [Obliq. and Aximedia, 1823.] Shell rather thin, oval, elliptical, swelled, nearly equilateral, broader behind, outside very smooth, and chesnut colour; inside, bluish white. Length, 4-5; diameter, 3-5; axis 3-7 of the breadth.

Knobhills streams, in east Kentucky.—Very small, lamellar tooth suboblique, thin. Perhaps a variety of *U. lenigata*. Sp. 9.

G. Truncilla.

99. Sp. *Unio perplexus*. (Tr. perplexa, 1830.) Shell rather suboval, slightly swelled, only subtruncate; rounded below, outside olivaceous, with narrow black lines, inside incarnate, iridescent. Length, 3-4, diameter, 1-3; axis, 2-5 of the breadth. Apex not prominent.

In the river Kentucky, about one inch, I have called it perplexing, because it deviates much from the other *Truncilla*, approximating to *Scalenaria* and *Plagiola*, but the hinge is like Truncilla.

100. Sp. *Unio granulatus*. (*Tr. granulata*, 1821. Shell thick, subtriedral, very much swelled, rounded below, posterior truncature nearly flat, subtesselate, granular; outside smooth, olivaceous, with broad blackish bands, inside bluish white. Length 1-2, diameter 1-2, axis 1-3 of the breadth. Apex slightly cordate.

In Salt river, rare, above one inch. Nearest to Tr. *Triqueter*, but less cordate, less tesselate, with granulations instead of warts behind. Not flexuose below, as *Tr. truncata*. Lamellar tooth very short.

101. Sp. *Unio metaplata*. [Tr. do., 1822.] Shell thick, subtriedral, much swelled, broad and curved below, posterior truncature nearly flat, hardly tesselate, subgranular above; cuticle yellowish, inside bluish white. Length 3-4, diameter 5-8, axis 2-5 of the length. Apex deeply cordate.

Var. 1. *Vittata*, with black bands.

In the Cumberland and Green Rivers, very rare; the largest Truncilla, often 2 inches, lamellar tooth crenulate, as in *Tr. truncata*. Sp. 19.

N. B. Besides these 26 new Unio, I find in my notes the account and figures of several others, such as *U. pustulatus*, *U. punctatus*, *U. Scaber*, *U. elegans*, *U. badius*, *U. crenulatus*, &c. but not having now the specimens before me, I must delay their publication.

Of my previous species of 1820, but few are found in Lamark last edition of 1819. My *U. latissima* is, perhaps, his *U. recta*. I found only 3 names, of different sp. from mine, clashing by similarity, *U. retusa*; *U sinuata*, and *U. depressa*. I have thus changed mine in consequence. My *U. retusa*, 1820, is now my *U. premorsus;* my *U. depressa* 1820, is my *U. compressus;* my *U. sinuata* 1820 is my *U. cultratus*.

Lamark and myself gave feminine terminations to our Unios; they are now generally made masculine, as I do here; but this difference is of little account.

The comparative proportions of the length, breadth, diameter, and axis of the Unios and other bivalve shells, having been misunderstood by some, it may be needful to state that my formula is a kind of abbreviation of a longer exposition. Thus when I say, *length one half, diameter one third, axis one fourth of the breadth*—I meant to say, and I must be understood to state the following longer account:—

The length of the shell is one half, the diameter is one third, and the axis is at one fourth of the whole breadth, or *largest dimension of the shell.*

In longitudinal shells this is reversed, the length being the longest dimension, becomes the size of comparison.

I ought to have added to the names of our late writers on *Unio*, Mr. Hildreth, who has described over again a few of my species, and Prof. Eaton, who I regret to say, has, (in his Zoological Text-Book, Albany, 1826, now before me.) noticed 33 species of *Unio* and *Alasmodon* of Say and Barnes, but none of my previous ones! and put them all back to the old genus *Mya* of Linneus! This, as well as his whole Zoological book, proves that he is forty years backwards in the science of Zoology, as he is 30 years backwards in Botany, and about 20 in Geology. But this is not peculiar to him, it is the fate of one half of our Naturalists, Botanists, and Geologists. The daily increase of knowledge and improvement in sciences is despised or neglected by them as useless innovations! While all the world, and all the sciences move forward, they would keep those they teach or cultivate at a stand! it is all in vain, and time will show it.

II. Genus or tribe Alasmodon.

This fine tribe of shells of which I knew only 2 species in 1819, was found rather prolific in species in 1820 and 1821. I ascertained then that it was also to be divided into several genera (subgenera or sections) offering many different peculiarities in the hinge. I have therefore established the following 4 genera with it.

1. Lasmigona. Cardinal tooth knobby, crenate and decurrent before. Lamellar tooth remplaced by an horizontal angular projection, flat above.

2. Amblasmodon. Cardinal tooth knobby crenate and decurrent before. Lamellar tooth remplaced by an obtuse oblique knob, a furrow between it and the ligament.

3. Decurambis. Cardinal tooth bilobe flexuose enamelled, decurrent on both sides, decurrence remplacing the lamellar tooth behind, no angular knob to it.

4. Sulcularia. Cardinal tooth small striated decurrent before, separated by an

oblique furrow from a small oblique projection remplacing the lamellar tooth, with a small fold in it.

All these shells are transversal and inequilateral; I have seen none yet longitudinal as among the Unios: most of the species are ribbed behind. The *A. complanata* of Say, must form another peculiar Genus, which I propose to call *Pterosyna;* having the united wings behind of the Genus *Metaptera.* The 2 *Alasmodon* of my monograph belong to the G. *Lasmigona.*

102 Sp. *Alasmodon ponderosum*, (*Lasm. ponderosa*, 1820.) Elliptical, very thick, somewhat swelled, truncate and broadly ribbed behind: yellowish and laminated outside, white and uneven inside. Length 3-5, diameter 1-3, axis 1-3 of the breadth.

In lower Ohio and in the Mississippi.—Large heavy shell, five to six inches broad, roughly rugose outside by their concentric lamina. Cardinal tooth nearly trilobe, lamellar angle obtuse, confluent together.

If these characters of the teeth should separate it from the *Lasmigona*, it may be called *Gonamblus.*

103 Sp. *Alasmodon rugosum* [*L. rugosa.* 1823.] Shell thick elliptical, hardly swelled, subtruncate behind, broad ribs behind and below, subsinuate below, outside rugose and olivaceous, white and nearly even inside.—Length 3-5, diameter 1-4, axis 3-4 of breadth.

Tennessee river, rare, 5 to 6 inches broad. Akin to the last, but more flat, less thick and heavy, teeth different, cardinal smaller not trilobe, angular projection less obtuse, with a wrinkle and small tooth at the base.

104 Sp. *Alasmodon sulcatum*, (*L. Sulcata.* 1823.) Shell thick, elliptical and swelled, posterior slope with broad ribs, surface olivaceous with large sharp concentric ribs and broad furrows between, inside white incarnate. Length 1-2, diameter 1-3, axis 1-4 of the breadth.

River Tennessee and Mississippi: fine large shell, 6 inches broad, beautiful nacre; cardinal tooth crenate, the angular projection acute before, obtuse behind. Beak or apex a little prominent and slighty rugose. Very rare.

105 Sp. *Alasmodon viridis*, (*L. viridis disc.* 1820.) Shell thin swelled, subelliptical quadrulated, posterior slope slanting truncate without ribs: outside greenish, nearly smooth, inside bluish, with flexuose wrinkles. Length 1-2, diameter 1-3, axis 1-3 of the breadth.

Var. I. *Chloris.* Bright green.

Var. II. *Radiata.* Olivaceous with green rays.

Var. III. *Fuscata.* Brownish.

In the Ohio and other streams. So much like *Unio viridis* outside as to be easily mistaken for it. Tooth small bilobe crenate, angular projection sharp with a wrinkle or furrow. One or two inches broad.

5 N. G. Amblamodon.

106 Sp. *Alasmodon hians* [*Amblasmodon hians*, 1823.] Shell thick, much swelled, elliptical, subobliqual and gaping, margin flexuolate, posterior slope with broad ribs. Outside rugose and yellowish brown, inside even pale incarnate. Length 7-20, diameter 2-5, axis 1-4 of length.

River Tennessee, fine rare shell, 5 inches broad. Hinge quite peculiar, cardinal tooth not lobed, large subcrenate, large oblique knob on the projection decurrent, twisted and curved behind.

6 N. G. Decurambis.

107 Sp. *Alasm. Scriptum* (*Decurambis literata disc.* 1822.) Shell rather thin, subelliptical, very much swelled, truncate behind, nearly flat with transverse furrows and ribs, subsinuate beneath. Outside smooth greenish with blackish spots like *capital letters !*—inside bluish. Nearly equilateral, apex ardate. Length and diameter one half, axis 5-12 of the length.

In Green river. Wonderful shell, exceedingly rare and strange, outside form of a *Truncilla*, 2 or 3 inches broad. Tooth flexuose trilobe compressed, decurrence befid before. Certainly a peculiar genus.

108 Sp. *Alasm. atropurpureum* (*Decurambis, ditto. disc.* 1823.) Shell rather thin, elliptical, hardly swelled, smooth and not truncate behind, subsinuate beneath: outside rugose, blackish purple, quite inequilateral, apex hardly cordate. Length one half, diameter and axis one third of the breadth.

In the river Cumberland, very rare, 3 inches broad. Tooth flexuose subtrilobe, hardly prominent. Very distinct from the last, although a true *Decurambis.*

7 N. G. Sulcularia.

109 Sp. *Alasm. badium* (*Sulcularia badia disc.* 1821.) Shell thin, suboval, truncate obliqually behind, back straight, rounded beneath, outside smooth bay with some faint bands, inside pale bay or rufous iridescent. Length 2-3, diameter and axis 1-4 of the breadth.

Small streams of the Knobs, rare, one or two inches: tooth obtuse, projection very small.

110 Sp. *Alasm. papyraceum* (*Sulcularia papyracea disc.* 1821.) Shell very thin and flat, elliptical, broader behind, truncate crenate with furrows and broad ribs: outside olivaceous a little uneven, inside bluish. Length one half, diameter 2-9, axis one fourth of breadth.

In East Kentucky. Very rare; 2 or 3 inches, tooth short and wide, projection with an oblique fold; the posterior ribs are seen both outside and inside.

III Genus or tribe Lasmonos.

8 N. G. Lasmonos. Cardinal tooth none, remplaced by a sinus, a flat tubercle, and a decurrent enamel. Lamellar tooth curved following the beak. General form of *Metaptera* with a small coalescent wing.

111 Sp. *Lasmonos Fragilis.* disc. 1822.—Shell very thin, depressed, suboval, broader behind, with a small wing, some nodulotities behind, outside smooth olivaceous, inside

purplish blue. Length 3-5, diameter and axis 3-10 of the breadth.

In East Kentucky, very rare, 2 or 3 inches wide. Very singular shell, which I mistook at first for a *Metaptera;* tubercle of the hinge hardly visible, lamellar tooth very long, close to the back, bifid at the end in the left valve. Type of a new Genus which may include other species when sought for in the south west.

IV. Genus or tribe, ANODONTA.

112 Sp. *Anodonta inflata.* disc. 1822.

Shell thick, elliptical; somewhat attenuated behind, very much swelled; summits wrinkled, subprominent, outside olivaceous, wrinkled, inside white iridescent. Length, 3-5, diameter 2-5, axis 3-10 of the breadth.

Var. 1. *Viridis.* Green outside.

Var. 2. *Fuscata.* Brown outside.

Var. 3. *Zonalis.* With green and brown zones.

River Kentucky and Green, the largest and finest sp. of the West, reaching 5 and 6 inches, hinge almost without any visible fold.

113. Sp. *Anodonta digonota.* (*Lastena digonota*, 1826.) Shell thin, oval swelled, back straight, obliqual, with two angles, one before and one behind, similar to small wings, sloping behind, with a flexuose edge; outside laminated, pale, olivaceous, inside bluish white, iridescent. Length 5-8, diameter 3-8, axis at 1-4 of the breadth.

From Lake Erie, two inches, hinge inside, with a flexuose fold, separated from the straight back. Perhaps a peculiar S. G. *Flexiplis.*

I have besides, another doubtful *Anodonta; A. rufa*, probably a var. of *A. ohiensis*, sp. 58.

V. Genus or tribe, CYCLAS.

I have no new sp. of Cyclas; but I am enabled to present a beautiful new genus of this tribe, which forms the passage between *Unio* and *Cyclas.* I call it *Diplasma*, meaning double lamellar teeth. The specimen before me, was not collected by myself; it belongs to the cabinet of shells of Mr. Hembel, of this city, who has had the goodness to lend it to me. It is labelled *Unio*, and is supposed to come from the river Tennessee, which I am inclined to doubt, because I have in my cabinet, a specimen nearly alike, from the river Ganges, collected by Dr. Burroughs, and because the G. *Diplasma* appears to be Asiatic. I therefore suspect that this species of Mr. Hembel, is also from Hindostan, and shall therefore include it in the the following

APPENDIX,

On eight Asiatic bivalve fluviatile shells.

These shells were all collected in the rivers of Hindostan, by Dr. Burroughs of this city. They appear very different from our North American shells, forming even often peculiar genera. They are 3 sp. of *Diplasma*, 1 sp *Loncosilla*, 2 sp. *Lampsilis*, and 1 *Obliquaria.*

9. N. G. DIPLASMA.

Shell inequilateral and transversal, hinge with two lamellar teeth, nearly confluent, united into a curve, not serrulate, more or less unequal, bilamellar anteriorly in the right valve, bilamellar posteriorly in the left valve.

Certainly a distinct Genus, more like *Cyclas* and *Hiria*, in the hinge than *Unio*, although so labelled by Dr. Burroughs, and our conchologists, by the external form merely. I suspect that many Asiatic *Unios* belong to it. I shall describe 3 of them, besides our doubtful American species.

114 Sp. *Diplasma marginata.* Shell thin, elliptical, swelled, back horizontal, sloping and truncate obliquely behind; outside very smooth, shining brown, anterior and interior margin yellowish, inside pale incarnate. Length one half, diameter 1-3, axis 3-10 of the breadth.

From the river Tennessee, as stated to Mr. Hembel, but so near the next, that the fact appears doubtful to me; perhaps the locality has been erroneously stated or labelled in Mr. Lea's cabinet, from whence the shell is said to have come, and it may be also a shell from Hindostan. Lamellar tooth properly curved, the anterior pretty long. Size of the shell over two inches.

115 Sp. *Diplasma similis.* Shell very thin, elliptical, not swelled, back horizontal, truncate obliquely behind, hardly sloping, outside smooth, dark olivaceous, with a pale margin, inside bluish incarnate. Length 7-15, diameter 4-15, axis 1-5 of the breadth.

From the river Ganges, so similar to the last as almost to appear the same, yet thinner, flatter, and teeth somewhat different, forming almost an angle rather than a curved arch, anterior tooth shorter, oblique, the posterior perfectly horizontal. Length nearly two inches.

116 Sp. *Diplasma vitrea.* Shell very thin and brittle, almost transparent, oval swelled, broader behind, with a slope outside, very smooth, greenish, or fulvescent, inside whitish, teeth subequal. Length 2-3, diameter 2-5, axis 2-5 of the breadth.

From the river Jellinghy in Bengal. Small, hardly over one inch, fine delicate shell.

117 Sp. *Diplasma striata.* Shell thick, suboval, swelled, behind sloping subtruncate and transversally striated, outside olivaceous greenish, smooth below, but longitudinally striated above; strias in a zigzag form in the middle, inside silvery white, teeth subequal, much curved. Length 2-3, diameter 2-5, axis 5-12 of the breadth.

Also from the river Jellinghy. Small, hardly one inch. This and the last agree in many points, and might form a peculiar sub-

genus *Hemisolasma*, having *shell ovate, axis submedial, lamellar teeth subequal.*

118 Sp. *Unio fulgens*, [*Lampsilis fulgens.*]

Shell thick, elliptical, swelled, attenuated behind, outside nearly smooth, laminated, ferruginous brown; inside of a beautiful metallic incarnate and iridescent. Length 1-2, diameter 1-3, axis 1-5 of the breadth.

From the river Ganges, two or three inches, beautiful shell, a true *Lampsilis*, with a long flexuose lamellar tooth subcrenulate; cardinal tooth compressed crenulate. Anterior fossule, very conspicuous below the anterior impression.

119 Sp. *Unio argyratus*, [*Lampsilis argyratus.*]

Shell thin, elliptical, swelled, attenuated behind, outside laminated greenish, decoricated and silvery at the summit, inside bluish iridescent. Length 1-2, diameter 1-3, axis 1-16 of the breadth

Also from the river Ganges. Size one and a-half inch. Very near to the S. G. *Leptodea*, but teeth as in the last, cardinal small crenulate, lamellar less flexuose, not crenulate. In both the teeth are wide apart as in all the *Lampsilis*.

120 Sp. *Unio corrugata*, of the authors from the river Baramputra, it is an *Obliquaria*, very near to my *U. Venus* and *U. Elliptica*, S. G. *Aximedia*. In Mr. Poulson's Cabinet, I have not yet been able to determine precisely whether it is well named, and not having the specimen before me, I cannot describe it.

10 N. G. LONCOSILLA.

Shell transversal, unequilateral, somewhat gaping, only one muscular impression anteriorly. No teeth as in *Anodonta*, but a hinge with a marginal nerve, or fold anteriorly; distinct from the margin, and a little obliqual behind. Ligament small at the very summit.—Animal unknown.

A distinct genus of the tribe *Anodonta*, which had been mistaken for a fluviatile *Solen* by Dr. Burroughs the discoverer of it; but all the *Solens* are marine shells. The name means little knife: it is different from all my S. G. of Anodonta.

121 Sp. *Loncosilla solenoides*, or *Anodonta solenoides.* Shell elliptic, somewhat swelled, both ends rounded and a little gaping, back horizontal, outside and inside smooth and whitish. Length 1-3, diameter 2-7, axis 3-7 of the breadth.

From the river Jellinghy in Bengal. Small, seldom one inch long. Posterior nerve of the hinge short.

Addition.—11th N. G. DIANISOTIS.

The examination of these Asiatic shells, enables me to affirm decidedly that the *Symphonota bialata* of Lea is also a peculiar genus, very different from our *Metaptera*, nearer to *Hiria* and *Diplasma*. I have seen it in Mr. Poulson's cabinet, and ascertained that it has, like *Lasmonos*, a lamellar tooth on each side, forming a curve as in Diplasma, but these teeth appear simple, not forked, and the *two unequal ears*, [whence my name] or wings distinguish it as *Metaptera* from *Unio*, and *Pecten* from *Ostrea*.

I propose to call it *Dianisotis chinensis*, as *bialata* is not a specific but generic character. I could see no cardinal tooth.

SUPPLEMENT

On the Fossil Bivalve Shells of the Western Region.

Almost all the fossil bivalves of the western states from Ohio to Alabama, belong to the great order of Terebratulites or rather Brachiopites, whose animals of G. *Brachiopus* were very different from those of the living bivalve shells, having ciliate limbs. My monograph of 1821 contained 23 genera, all new except five [and about 80 species] and five others had already been published in 1819 by me in my account of 70 N. G. of animals, *Journal de Physique.*

I propose to give an epitome of this monograph which I have not yet seen in print. I possess nearly all the shells. They are found in the secondary strata of limestone, slate and sandstone which extend from Lake Erie to the Gulf of Mexico, in horizontal strata, the limestone being the lowest, and the sandstone the highest, forming in many parts hills and ridges from 100 to 500 feet high. They are very rare in the slate.

Order BRACHIOPIA.

Animal *brachiopus* when living, *brachiopites* when fossil. Shell bivalve, animal within having a bilobed mantle, and two thick ciliate arms or limbs.

I. Family, LINGULARIA. Shell equivalve, longitudinal, inequilateral, valves entire, not perforated, 1. G. Lingula of Brugiere.

II. Family TEREBRARIA. Shell inequivalve, one valve perforated or emarginated.

1st Section, *Macrilia.* Shell longitudinal.

2 G. Diclisma, Raf. Equilateral, the two valves split at the summit.

3 G. Apleurotis Raf. 1819. Inequilateral, the great valve perforate, and with a lateral wing.

4 G. Trigorima, Raf. Equilateral, smaller valve perforate, four cavities at the base separated by three septa.

5 G. Obovites, Raf. Equilateral, the great valve perforate.

6 G. Magas (Sowerby) equilateral, great valve with an angular opening.

2d Section, *Isilia.* Shell equilateral, nearly equital or hardly transversal.

7 G. Terebratula (Brugiere) great valve perforate.

8 G. Spinifer [Sowerby] subequital, great valve with an angular opening, hinge with two spiral appendages.

9 G. Gonotrema, Raf. Shell subtransversal, small valve with an angular opening, and interval cavity, hinge short, straight or curved.

3d Section, Platilia. Shell equilateral, transversal or very broad.

10 G. PLATILITES, Raf. Small valve with an angular opening and internal cavity, hinge very long, often longer than the shell which is thus winged.

11 G. PLEURINIA, Raf. Differ from last by the great valve perforate, shell winged also.

12 G. PACHILOMA, Raf. Inequilateral, with thick edges, hinge with a linear opening.

13 *Strophomenes*, Raf. Equilateral, hinge broad, great valve notched by a lunulate sinus receiving a lunulate projection of the smaller valve.

III. Family ATREMOSIA. Shell inequivalve, valves entire, not perforated.

14 G. ORBICULA (Cuvier, Lamark.) Shell orbicular, one valve flat and one conical.

15 G. *Strophesia*, Raf. Shell orbicular equilateral, beak curved in the great valve.

16 G. *Diclipsites* Raf. Differs from last by hinge short and straight; no proeminent beak.

17 G. TRUNCULITES, Raf. Subequital, valves convex, equilateral, nearly equal, hinge short and truncate.

18 G. *Productus*, [*Sowerby*,] Equilateral, winged, or rather auriculated, one valve convex, the other flat or convex, hinge linear.

19 G. *Styriasis*, Raf. Differ from last by great valve, with a projecting cruciform appendage on the beak.

20 G. *Goniclis*, Raf. Shell longitudinal, great valve concave inside, with a longitudinal angle outside.

21 G. *Megarites*, Raf. Shell longitudinal, equilateral suborbicular, valves nearly equal, both convex with concentric ridges, hinge like a linear horizontal fissure.

Most of the species belong to the following Genera.

Obovites—6 sp.
Gonotrema—15 sp.
Platilites—13 sp.
Shophomenes—16 sp.

In a supplement of March 1821, I added 2 N. G.

22 G. *Amblotrema*, Raf. Differs from *Gonotrema* by the opening or perforation, being oval or oblong, and obtuse.

23 G. *Pleuranisis*, Raf. Differ from *Platilites* by having the shell inequilateral.

The geological age of these shells appears the same as that of the oldest fossils, Madreporites, Turbinolites, Encrinites, &c. being found together and promiscuously in the same strata, or in diluvial debris; but the different genera and species are not found together, sometimes they are wide apart, or very rare; tney are mostly silicified.

II. SUPPLEMENT.

Description of the TULOSITES, Raf. N. G. of fossil Encrinite—disc. 1821.

Pedunculate. Head articulated to the stem by a round concave articulation, conical verrucose, monostome, or with only one terminal opening hexagone, and surrounded by a thick hexagone margin with six warts on it.

This is a very striking genus, evidently of the tribe of *Encrinites*, but with a very different structure and mouth. I have a unique species and specimen, which is from the geological region of the *Encrinites* and *Pentremites*, the knob hills of Kentucky, Tennessee, and Alabama. I value it very high. The name means Warty fossil.

Tulosites conica. Conical, lower part convex, smooth, with a concave, round marginated central pit; and a crenate margin, upper part with several rows of obtuse warts.

Remarks—Pale brown, one ineh long, three fourths broad, the warts are a little irregular in position and size, some of them are a little umbilicated; the mouth is small with acute angles inside, and the sides convex.

An account of the most rare shells, fossil remains, &c. of the cabinet of Prof. Rafinesque, is now printing, and will appear in November.

They will all be disposed of along with those above noticed, if a suitable price is offered for them.

This small tract contains 30 new Genera, and 47 new Species.—Price 25 cents.

William Sharpless, Printer, No. 2 Decatur street.